

In the claims:

1-51. (cancelled)

52. (new) An isolated stem cell or stem cell line carrying a disease-causing mutation in a genomic polynucleotide sequence thereof.

53. (new) The isolated stem cell or stem cell line of claim 52, wherein said stem cell is of embryonic origin.

54. (new) The isolated stem cell or stem cell line of claim 52, wherein said stem cell is of human origin.

55. (new) The isolated stem cell or stem cell line of claim 52, wherein said disease-causing mutation is selected from the group consisting of a missense mutation, a nonsense mutation, a frameshift mutation, a readthrough mutation, a promoter mutation, a regulatory mutation, a deletion, an insertion, an inversion, a splice mutation and a duplication.

56. (new) The isolated stem cell or stem cell line of claim 52, wherein said disease-causing mutation is selected from the group consisting of a missense mutation, a nonsense mutation, a frameshift mutation, a readthrough mutation, a promoter mutation, a regulatory mutation, a deletion, an insertion, an inversion, a splice mutation and a duplication.

57. (new) The isolated stem cell or stem cell line of claim 52, wherein said disease-causing mutation is selected from the group consisting of the W1282X as set forth in SEQ ID NO:24 associated with cystic fibrosis, the PAX3-del28 (510del28 in SEQ ID NO:34) associated with van Waardenburg syndrome, more than 50 (CTG) repeats as set forth in SEQ ID NO:22 associated with Myotonic dystrophy and the 1505C→T (P377L) as set forth in SEQ ID NO:21 associated with metachromatic leukodystrophy.

58. (new) The isolated stem cell or stem cell line of claim 52, wherein said stem cell is capable of being maintained in an undifferentiated state for at least 41 passages.

59. (new) The isolated stem cell or stem cell line of claim 52, wherein said stem cell exhibits a karyotype of 46, XX or 46, XY following at least 30 passages.

60. (new) The isolated stem cell or stem cell line of claim 52, wherein said stem cell exhibits pluripotent capacity following 40 passages.

61. (new) An isolated embryoid body comprising a plurality of cells at least some of which carry a disease-causing mutation in a genomic polynucleotide sequence thereof.

62. (new) The isolated embryoid body of claim 61, wherein said embryoid body is derived from a stem cell or a stem cell line.

63. (new) The isolated embryoid body of claim 62, wherein said stem cell is of human origin.

64. (new) The isolated stem cell or stem cell line of claim 62, wherein said stem cell exhibits a karyotype of 46, XX or 46, XY following at least 30 passages.

65. (new) The isolated embryoid body of claim 61, wherein said disease-causing mutation is selected from the group consisting of a missense mutation, a nonsense mutation, a frameshift mutation, a readthrough mutation, a promoter mutation, a regulatory mutation, a deletion, an insertion, an inversion, a splice mutation and a duplication.

66. (new) The isolated embryoid body of claim 61, wherein said disease-causing mutation is associated with a genetic disorder selected from the group consisting of cystic fibrosis (CF), myotonic dystrophy (DM), van Waardenburg syndrome (WS), metachromatic leukodystrophy (MLD), Gorlin disease, Huntington's disease (HD), spinal muscular atrophy (SMA) and Duchenne muscular dystrophy (DMD).

67. (new) The isolated embryoid body of claim 61, wherein said disease-causing mutation is selected from the group consisting of the W1282X as set forth in SEQ ID NO:24 associated with cystic fibrosis, the PAX3-del28 (510del28 in SEQ ID NO:34) associated with van Waardenburg syndrome, more than 50 (CTG) repeats as set forth in SEQ ID NO:22 associated with Myotonic dystrophy and the 1505C→T (P377L) as set forth in SEQ ID NO:21 associated with metachromatic leukodystrophy.

68. (new) The isolated embryoid body of claim 61, wherein said embryoid body is capable of differentiating into cells of the embryonic ectoderm, embryonic endoderm and/or embryonic mesoderm.

69. (new) An isolated differentiated cell, tissue or organ carrying at least one disease-causing mutation in a genomic polynucleotide sequence thereof.

70. (new) The isolated differentiated cell, tissue or organ of claim 69, wherein said differentiated cell, tissue or organ is of human origin.

71. (new) The isolated differentiated cell, tissue or organ of claim 69, wherein said disease-causing mutation is selected from the group consisting of a missense mutation, a nonsense mutation, a frameshift mutation, a readthrough mutation, a promoter mutation, a regulatory mutation, a deletion, an insertion, an inversion, a splice mutation and a duplication.

72. (new) The isolated differentiated cell, tissue or organ of claim 69, wherein said disease-causing mutation is associated with a genetic disorder selected from the group consisting of cystic fibrosis (CF), myotonic dystrophy (DM), van Waardenburg syndrome (WS), metachromatic leukodystrophy (MLD), Gorlin disease, Huntington's disease (HD), spinal muscular atrophy (SMA) and Duchenne muscular dystrophy (DMD).

73. (new) The isolated differentiated cell, tissue or organ of claim 69, wherein said disease-causing mutation is selected from the group consisting of the W1282X as set forth in SEQ ID NO:24 associated with cystic fibrosis, the PAX3-del28 (510del28 in SEQ ID NO:34) associated with van Waardenburg syndrome, more than 50 (CTG) repeats as set forth in SEQ ID NO:22 associated with Myotonic dystrophy and the 1505C→T (P377L) as set forth in SEQ ID NO:21 associated with metachromatic leukodystrophy.

74. (new) A method of identifying an agent suitable for treating a disorder associated with at least one disease-causing mutation, comprising:

- (a) generating a stem cell line or an embryoid body carrying the at least one disease-causing mutation;
- (b) subjecting cells of said stem cell line or said embryoid body to differentiating conditions to thereby obtain differentiated cells exhibiting an effect of the at least one disease-causing mutation and;
- (c) exposing said differentiated cells to a plurality of molecules and identifying from said plurality of molecules at least one molecule capable of regulating said effect of the at least one disease-causing mutation on said differentiated cells, said at least one molecule being the agent suitable for treating the disorder associated with the at least one disease-causing-mutation.

75. (new) The method of claim 74, wherein said embryoid body is derived from a stem cell or a stem cell line.

76. (new) The method of claim 74, wherein said stem cell is of embryonic origin.

77. (new) The method of claim 74, wherein said stem cell is of human origin.

78. (new) The method of claim 74, wherein said stem cell exhibits a karyotype of 46, XX or 46, XY following at least 30 passages.

79. (new) The method of claim 74, wherein said disease-causing mutation is selected from the group consisting of a missense mutation, a nonsense mutation, a frameshift mutation, a readthrough mutation, a promoter mutation, a regulatory mutation, a deletion, an insertion, an inversion, a splice mutation and a duplication.

80. (new) The method of claim 74, wherein said disease-causing mutation is associated with a genetic disorder selected from the group consisting of cystic fibrosis (CF), myotonic dystrophy (DM), van Waardenburg syndrome (WS), metachromatic leukodystrophy (MLD), Gorlin disease, Huntington's disease (HD), spinal muscular atrophy (SMA) and Duchenne muscular dystrophy (DMD).

81. (new) The method of claim 74, wherein said disease-causing mutation is selected from the group consisting of the W1282X as set forth in SEQ ID NO:24 associated with cystic fibrosis, the PAX3-del28 (510del28 in SEQ ID NO:34) associated with van Waardenburg syndrome, more than 50 (CTG) repeats as set forth in SEQ ID NO:22 associated with Myotonic dystrophy and the 1505C→T (P377L) as set forth in SEQ ID NO:21 associated with metachromatic leukodystrophy.

82. (new) The method of claim 74, further comprising a step of isolating lineage specific cells from said embryoid body prior to step (b).

83. (new) The method of claim 82, wherein said isolating lineage specific cells is effected by sorting of cells contained within said embryoid body via fluorescence activated cell sorter.

84. (new) The method of claim 82, wherein said isolating lineage specific cells is effected by a mechanical separation of cells, tissues and/or tissue-like structures contained within said embryoid body.